REMARKS

Claim 18 has been canceled. Claims 12-17 are active in the case.

The present invention relates to a method of preparing dye-containing polymer particles of at least one dye in a matrix of an essentially water-insoluble polymer.

Claim Amendment

Claim 12 has been amended to recite that the water-insoluble polymer and dye are dissolved in a water-miscible organic solvent and then the solution obtained is continuously comixed in a static mixing nozzle with an aqueous phase at relative rates sufficient to precipitate dye-containing polymer particles ranging in size from 5 nm to 500 nm of at least one dye in a polymer matrix. As a consequence, Claim 18 is no longer necessary and Claim 17 has been amended to prevent redundancy in the claims. None of the amendments introduce new matter into the case. Entry of the amendments is respectfully requested.

Invention

The present invention is directed to a process of preparing dye-containing particles by preparing a solution of at least one dye and a water-insoluble polymer dissolved in a water-miscible organic solvent, and continuously comixing in a static mixing nozzle the dye/polymer solution with an aqueous phase at relative rates sufficient to precipitate dye-containing polymer particles ranging in size from 5 nm to 500 nm of the at least one dye in a polymer matrix. The defined process of the invention achieves the very desirable objective

of providing water-insoluble dyes having a small particle size and a narrow particle size distribution.

Prior Art Rejection

Claims 12-16 and 18 have stood rejected based on 35 U.S.C. 103(a) as obvious over Devissaguet et al, U.S. Patent 5,049,322 in view of Hou U. S. Patent 5,270,445.

As has clearly stated on the record previously, the Devissaguet et al disclosure describes the preparation of dispersible colloidal systems of a substance in nanocapsules. The process disclosed requires the incorporation of a core substance B in a substance A which is a film forming substance. Substance A and substance B are dissolved in a suitable solvent and thereafter a non-solvent such as water is mixed with the solution thereby forming the nanocapsules of the patent. However, critically, the patent does not teach or suggest a continuous process as claimed in the present invention as demonstrated in Example 9 of the specification in which an organic solvent solution of a dye and a polymer is **continuously mixed with water in a static mixing nozzle** with the resultant precipitation of polymer/dye particles. This process results in dye-containing polymer particles that are of small particle size and narrow particle size distribution (dispersion width of 31.6 % in Ex 9) and as described at page 2, lines 41-44 of the specification. On the other hand, the different procedure of the patent results in polymer particles that have a size of < 500 nm. This difference is critical to the issues in this case because the present dye/polymer particles having the indicated narrow particle size distribution afford distinct advantages in the printing of print media.

In order to establish on the record that the process of the invention provides for a dye/polymer particle product having the indicated narrow particle size distribution which is distinct from the dye/polymer particle product prepared from an embodiment of the Devissaguet et al patent, applicants direct the attention of the Examiner to the attached Declaration (37 CFR 1.132) which describes an experiment within the scope of the invention using the continuous comixing of an organic solvent solution containing dye and polymer and the distinctly different mixing of solution and aqueous medium by simple stirring as described in Example 1 of the patent, for instance. In both experiments essentially the same organic solvent (THF) solution of dye and polymer were employed. Although the two experiments show different amounts of starting material and solvent, they nevertheless are directly comparable because the ratios of polymer/dye, polymer/organic solvent, dye/organic solvent and polymer/dye solution/aqueous phase in the experiments are the same. Experiment a of the invention is simply a scale-up of experiment b (Devissaguet et al) because the static mixing nozzle requires a minimum amount of solution to be fed in. The results are that in experiment a of the invention the particle size of polymer/dye was 150 nm having a variance of 30 %. On the other hand, by contrast, in experiment b the particle size of polymer/dye was 238 nm having a variance of 44 %. Clearly, the two products are distinctly different which gives rise to different printing characteristics. Accordingly, the results obtained support applicants' contention that the invention as claimed is patentably distinct from the disclosure of Devissaguet et al.

Applicants retain their position that the Hou patent does not overcome the deficiencies of Devissaguet et al. Hou discloses a method of forming fine particles of

polymer by first forming a solution of a polymer in a good solvent for the polymer and then adding a non-solvent for the polymer but which is miscible with the good solvent to the solution, thereby resulting in precipitation of fine particles of polymer. However, the reference does not show or suggest a continuous process of forming fine particles of polymer of the invention which employs a static mixer and therefore does not overcome the deficiencies of the Devissaguet et al patent. It is therefore believed that the stated ground of rejection has been overcome and withdrawal of the rejection of record is respectfully requested.

It is now believed that the application is in proper condition for consideration on its merits.

Respectfully submitted,

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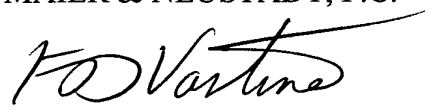

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